National Aeronautics and Space Administration
NASA Marshall Star: June 22, 2006 : Vol. 46/No. 39

MARSHALL STAR

Serving the Marshall Space Flight Center Community June 22, 2006

NASA gives 'Go' for Space Shuttle Discovery Launch

NASA senior managers on Saturday, June 17, cleared Space Shuttle Discovery for a July 1 flight to the International Space Station.

The decision was announced after the flight readiness review, a meeting in which top NASA managers and engineers set launch dates; determine whether the shuttle's complex array of equipment, support systems and procedures are ready for flight; and assess any risks associated with the mission.

NASA/Ken Thornsley

Space Shuttle Discovery rests on the hardstand of Launch Pad 39B at NASA's Kennedy Space Center.

"We had two full days of an intensive flight readiness review," said Administrator Michael Griffin. "It was spirited and one of the most open, yet non-adversarial meetings I've seen since returning to NASA."

Commander Steve Lindsey and his six crewmates are scheduled to lift off at 2:48 p.m. CDT to begin a 12-day mission, designated STS-121. Discovery's crew will test new hardware and techniques to improve shuttle safety, as well as deliver supplies, make repairs and bring a third crew member to the station.

"We were really careful to evaluate everything as thoroughly as we could," said Associate Administrator for Space Operations Bill Gerstenmaier, who chaired the flight readiness review. "But the review of the ice/frost ramp was one of the most vigorously discussed."

The ice/frost ramps are structures made of insulation foam that cover 34 brackets on the outside of the shuttle's external fuel tank. The ramps have been cited as a potential source of foam loss, which could cause damage

See Discovery on page 10

Marshall holds 2006 Annual Honors Day

The Marshall Center held its Annual Honors Day ceremonies in Morris Auditorium on Wednesday, June 21.

NASA and Marshall recognized employees who have made significant contributions to America's space program over the past 12 months or longer.

There were two ceremonies held, the NASA Honor Awards and the Marshall Center Honor Awards.

NASA Associate Administrator Rex Geveden presented the awards with Marshall Director David King.

See the list of award recipients beginning on page 3.

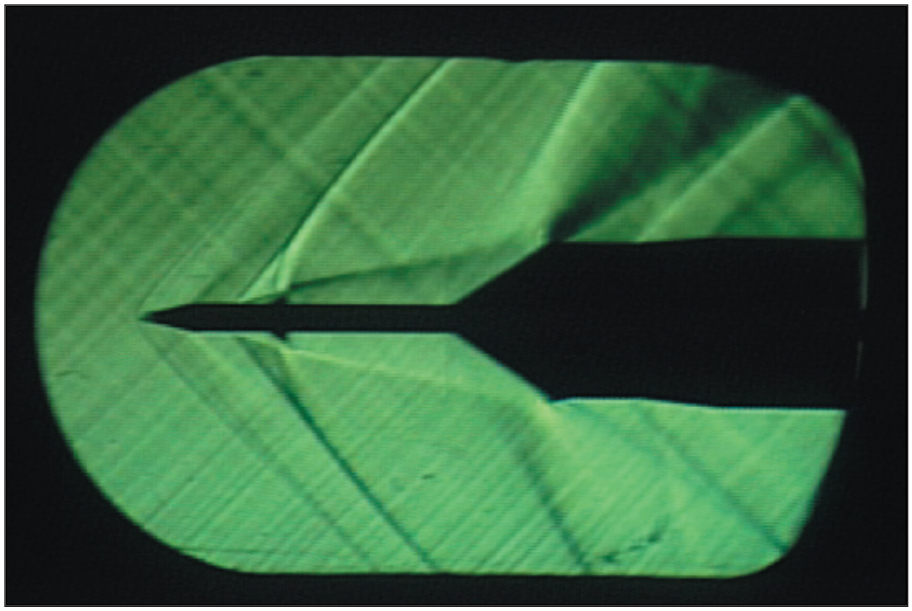
Exploration Systems Progress Report

Wind tunnel testing returns to Marshall

By Sheri Bechtel

Marshall engineers have begun a new series of wind tunnel tests that will aid development of the agency's future space transportation system — the Crew Launch Vehicle that will loft the Crew Exploration Vehicle to orbit early next decade.

The series of tests is part of a coordinated partnership between NASA field centers and industry to set the foundation for the design and development of the Crew Exploration Vehicle capsule and Crew Launch Vehicle as an integrated system. The partnership includes NASA's Marshall Center; Langley Research Center in Hampton, Va.; Ames Research Center in Moffett Field, Calif.; and Boeing, Inc., in St. Louis, Mo.



NASA/MSFC

Engineers conduct wind tunnel testing on a partial model of the Crew Launch Vehicle that includes a portion of the upper stage, the spacecraft adapter, the Crew Exploration Vehicle, and the launch abort system. The tests are being performed at Marshall's Aerodynamic Research Facility.

The current wind tunnel tests, which began in June, are being performed at Marshall's Aerodynamic Research Facility. Engineers have conducted 80 runs on a partial model of the Crew Launch Vehicle that includes a portion of the upper stage, the spacecraft adapter, the Crew Exploration Vehicle, and the launch abort system. The abort system is designed to lift the crew clear of the propulsion stack before or during launch in the event of an emergency.

The tests were performed in the 14-by-14-inch cross section wind tunnel. The 1.5 percent scale model is approximately 13-inches long.

Wind tunnel "flights" are used to assess three-dimensional geometric configurations before conceptual designs are incorporated into proposed space vehicle hardware. In the test tunnel, giant fans generate artificial wind that flows over scale-model vehicles, engines or rockets through a wide range of speeds. The data gathered helps rocket engineers determine the flight performance characteristics, maneuverability and payload capability of new concepts.

Information from the tests will provide feedback on design elements for both the crew exploration and launch vehicle concepts. Marshall engineers are conducting flow visualization testing on the partial model to analyze the Crew Exploration Vehicle launch abort system design geometry. The imaging is used to identify shock waves and component flow expansion characteristics that are similar to those experienced during supersonic flight, or those faster than the speed of sound.

Testing is being performed over a wide range of speeds — between Mach 0.8 and Mach 4.45.

The current testing followed a series of tests conducted in May. Engineers performed test runs on two 38-inch, or 1-percent, scale models of the entire integrated launch vehicle stack with the crew capsule, service module and launch abort system. These tests were conducted at the Unitary Plan Wind Tunnel at NASA's Langley Research Center and the Polysonic Wind Tunnel at Boeing.

The Langley tests were conducted in a supersonic wind tunnel with a 4-foot high by 4-foot wide test section. Performed over a Mach range of 1.5 to 4.5, the tests measured model forces similar to what will be experienced in supersonic flight. The tests were done on both a smooth model and a model containing additional geometric details, or systems components that protrude from the vehicle causing drag, such as the booster separation motors and reaction control system.

The Boeing wind tunnel facility in St. Louis also has two 4-by-4-foot test sections, and can conduct aerodynamic testing at three speed ranges — from subsonic, slower than the speed of sound; through transonic, at the speed of sound or slightly above; to supersonic. The May tests were performed over a Mach number range of 0.5 to 1.6. Engineers also performed oil flow tests, in which colored oils were put on the model to test air flow surface patterns.

Additional configuration tests on a partial 1-percent scale model are planned through July in the wind tunnel at Marshall. Those tests will serve as a foundation for more detailed launch vehicle design testing in the fall.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

2006 NASA/Marshall Center Annual Honors Day

Presidential Rank Awards

Rank of Distinguished Executive

Garry Lyles
Exploration Mission Systems Directorate, NASA Headquarters

Rank of Meritorious Executive

Rex D. Geveden
Office of the Administrator, NASA Headquarters

James H. Carter
Office of Center Operations

Christopher E. Singer
Engineering Directorate

Exceptional Engineering Achievement Medal

James L. Walker
Engineering Directorate

Exceptional Bravery Medal

Curtis W. Bahr
QUALIS/Engineering Directorate

Outstanding Leadership Medal

Mark E. Boudreaux
Science & Mission Systems Office

Raymond G. Clinton Jr.
Safety & Mission Assurance Directorate

William R. Humphries
Science & Mission Systems Office

Carl P. Jones
Engineering Directorate

Anthony T. Lyons
Science & Mission Systems Office

David M. Martin
Shuttle Propulsion Office

Melissa K. Van Dyke
Engineering Directorate

Exceptional Service Medal

David G. Black
Office of the Chief Information Officer

David E. Brock
Office of Procurement

Robert E. Butler
Office of the Chief Information Officer

Rickey D. Cissom
Office of the Chief Financial Officer

Richard A. Cloyd
Engineering Directorate

Sharon D. Cobb
Science & Mission Systems Office

Portia B. Dischinger
Office of the Chief Information Officer

William R. Feltner
Engineering Directorate

Charles J. Finnegan
Engineering Directorate

Dennis Foster
Office of Center Operations

John M. Hanson
Engineering Directorate

Charles H. Horne
Engineering Directorate

Ronald J. Koczor
Science & Mission Systems Office

Jeffrey R. Mayo
Exploration Launch Projects Office

Jonathan Pettus
Office of the Chief Information Officer

David A. Schaefer
Safety & Mission Assurance Directorate

Charles F. Schafer
NASA Langley Research Center

John R. Sharp
Engineering Directorate

See Exceptional Service Medal on page 5

Exceptional Service Medal (continued)

David L. Sparks
Engineering Directorate

Chad Summers
Engineering Directorate

Susan G. Turner
Engineering Directorate

Ronald E. White
Engineering Directorate

Libby K. Youmans
Engineering Directorate

George M. Young
Science & Mission Systems Office

Exceptional Achievement Medal

Alex C. Adams
Safety & Mission Assurance Directorate

Allen S. Bacskay
Science & Mission Systems Office

Erin K. Birchmeier
Office of the Chief Information Officer

Coy Brown
Office of Human Capital

Joseph C. Cianciola
Safety & Mission Assurance Directorate

Dennon J. Clardy
Science & Mission Systems Office

Thomas F. Erdman
Science & Mission Systems Office

Rodney P. Grubbs
Engineering Directorate

Sharon H. Ing
Office of the Chief Information Officer

Robert E. Kapustka
Engineering Directorate

Emily O. Kendall
Office of Strategic Analysis & Communications

Vygantas P. Kulpa
Engineering Directorate

Karen B. MacLeod
Engineering Directorate

Jennifer B. McCaghren
Office of Procurement

John B. McDougle
Office of the Chief Information Officer

Roxanne C. Melton
Office of Procurement

Edwin H. Miller
Shuttle Propulsion Office

Edward E. Montgomery IV
Science & Mission Systems Office

See Exceptional Achievement Medal on page 6

Exceptional Achievement Medal (continued)

Elizabeth G. Paschall
Office of the Chief Information Officer

Rodney N. Phillips
Engineering Directorate

Thomas A. Phillips
Engineering Directorate

Shawn E. Reagan
Science & Mission Systems Office

James A. Richard
Engineering Directorate

Joanne M. Terek
Engineering Directorate

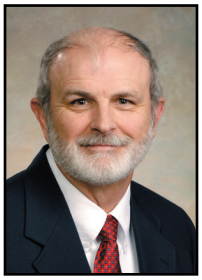
Arthur H. Werkheiser
Engineering Directorate

Not pictured: **Bonnie F. James**
Science & Mission Systems Office

Exceptional Public Service Medal

Hegan E. Belue
IBM/Office of Center Operations

Bobby W. Collier
EG&G/Office of Center Operations



Michael L. Culver
ASRI/Office of Human Capital

Lynn Motley
ASRI/Office of Human Capital

Christopher G. Parsons
BAH/Office of Center Operations

R. Lee Pitts
CSC/Engineering Directorate

NASA Group Achievement Award

Agency Labor Distribution System Project Team
(Presented at NASA Headquarters)
Bellows Heater Team (Return to Flight)
Biotechnology Carrier Team
Building 4600 Design and Construction Team
Chandra X-ray Center Science Processing Team
Huntsville Operations Support Center Integration of Space Transportation System Data Reduction Services Team (Return to Flight)
Integrated Powerhead Demonstrator Engine System Test Team
International Space Station Payload Operations Restructuring Team
Low Thrust Trajectory Tool Management and Development Team
NASA Identity Management Team
NASA Integrated Services Network Russia Services Team
New Horizons Launch Campaign Team
New Space Shuttle Wind Persistence Increment Team
Return to Flight Spray-On Foam Insulation for External Tank Team (Return to Flight)
Reusable Solid Rocket Motor Ply Lift Investigation Team
Safety and Mission Assurance STS-114 External Tank Foam Loss Investigation Team (Return to Flight)
Solar Electric Propulsion Management Team
Space Radiation Shielding Project Team
Space Shuttle Main Engine Environments Team (Return to Flight)
Space Shuttle Natural Environments Integrated Hazard Analysis Report Team
Storm Airborne Monitor for Precipitation Intelligent Sensor Control Team
Surface Power System Study Team
Transportation Management Services Solution Pilot Team
Tropical Cloud Systems and Processes Team
Unified NASA Information Technology Services National Security Systems Support Team
VIPA Vehicle Design Team
WB-57 Ascent Video Experiment Sensor Element Team (Return to Flight)
Wide Area Network Replacement Team
X-37 ALTV Project Team
X-37 Orbital Vehicle Key Technologies Hot Structures Team

NASA HONOR AWARDS

Public Service Group Achievement Award

The Great Moonbuggy Race Team

One NASA "Center Best" Peer Award

MAPTIS II Development Team
Michael A. Mitchell, Engineering Directorate

Awards External to NASA

Eagle Manned Mission Success Award
Donna M. Freeland, Kennedy Space Center (submitted by the Shuttle Propulsion Office)

NASA Blue Marble Awards-Shuttle Environmental Assurance Team
Steve E. Glover, Shuttle Propulsion Office

NASA Blue Marble Awards-Energy Management Team
Robert T. Mathis, Office of Center Operations

NASA Blue Marble Awards-Clean Air Act Principal Center Team
Sharon Scroggins, Office of Center Operations

Rotary National Award for Space Achievement Stellar Award
Stephen A. Cook, Exploration Launch Projects Office

MSFC HONOR AWARDS

Director's Commendation Certificate

Richard O. Ballard, Engineering Directorate
Douglas G. Bateman, Safety & Mission Assurance Directorate
Richard J. Blakeslee, Science & Mission Systems Directorate
Jeffrey D. Brown, Engineering Directorate
Janice Burrough, Office of Procurement
Gerald L. Campbell, Engineering Directorate
Jack M. Chapman, Engineering Directorate
Jason C. Chuang, Engineering Directorate
Cecelia Culver, Office of Strategic Analysis & Communications
Jerry B. Graham, Science & Mission Systems Office
Jeff Hagopian, Science & Mission Systems Office
Timothy A. Hemken, Safety & Mission Assurance Directorate
Michael G. Houts, Science & Mission Systems Office
Mark W. James, Engineering Directorate
Abbie J. Johnson, Office of the Chief Counsel
Edward F. Johnson, Engineering Directorate
Isaac W. Jones, Jr., Office of Procurement
William A. Lacey, Office of the Chief Financial Officer
Matthew D. Lansing, Engineering Directorate
Anne Lewis, Office of Procurement
Robert M. Linner, Shuttle Propulsion Office
Jane D. Locke, Office of the Chief Financial Officer

Director's Commendation Certificate

Continued

Joseph B. McConnell, Engineering Directorate
Stephen F. Newton, Office of Strategic Analysis & Communications
Dennis L. Norris, Office of Center Operations
Kathryn Y. Ogle, Engineering Directorate
Brian G. Overbey, Shuttle Propulsion Office
Warren T. Peters, Engineering Directorate
Jennifer Simmons, Office of Human Capital
Linda S. Smartt, Science & Mission Systems Office
Timothy A. Smith, Engineering Directorate
Scotty J. Sparks, Engineering Directorate
Kenneth Lamar Stacy, Engineering Directorate
James R. Stephens, Engineering Directorate
Dexter D. Strong, Engineering Directorate
Michael W. Suits, Engineering Directorate
Michael L. Tinker, Engineering Directorate
Jeffrey S. West, Engineering Directorate
James P. Whitaker, Engineering Directorate
Deborah R. Wills, Office of the Chief Information Officer
Michael D. Wilson, Office of Center Operations

Certificate of Appreciation

Russell S. Abrams, Engineering Directorate
Matthew H. Appleby, Boeing/Science & Mission Systems Office
Sang D. Bai, Engineering Directorate
Ronald D. Beshears, Engineering Directorate
Joel B. Best, Engineering Directorate
Burton L. Bright, Office of the Chief Information Officer
Jackie J. Byrnes, Office of Procurement
John W. Cole, Engineering Directorate
Michelle B. Delay, Office of Strategic Analysis & Communications
Mary J. DeMurray, HEI/Office of Strategic Analysis & Communications
Thomas M. Dietrich, Engineering Directorate
Stephanie J. Elliott, Exploration Launch Projects Office
Robert J. Erickson, Engineering Directorate
Gene E. Fundum, Office of Center Operations
Richard F. Gladwin, Office of Strategic Analysis & Communications
Andrew F. Heaton, Engineering Directorate
Karen C. Hicks, Engineering Directorate
Todd Holloway, Science & Mission Systems Office
Betty C. Kilpatrick, Office of Procurement
Timothy W. Lawrence, Engineering Directorate
Joseph C. Leahy, Engineering Directorate
Debbie Robinson Matthews, Office of Procurement
Dana F. May, Engineering Directorate
Nance-Jo Ogozalek, Engineering Directorate
Binayak Panda, Engineering Directorate
Robert W. Pruitt, COLSA/Engineering Directorate
Steven Purinton, Science & Mission Systems Office
Jeffery T. Rayburn, Engineering Directorate

Certificate of Appreciation

Continued

Melvin L. Scruggs, Office of Center Operations
Subhayu Sen, BAE/Science & Mission Systems Office
Stephen E. Skelley, Engineering Directorate
Carey G. Thompson, Exploration Launch Projects Office
Tommy L. Thompson, BAE/Engineering Directorate
Alicia A. Turpin, Engineering Directorate
Mack M. Vann, SAIC/Engineering Directorate
Emanuel J. Walker, Engineering Directorate
John R. West, Science & Mission Systems Office
Gene Whitaker, S3/Safety & Mission Assurance Directorate
Ronald L. White, Office of the Chief Information Officer
David M. Whitten, Engineering Directorate

Group Achievement Award

Automated Dynamic Acceptance Procedure Test Stand Team
Chandra X-ray Center Systems Engineering Team
Cost Management Team
Earned Value Management Implementation Team
ECLSS Ground Support Equipment Development Team
Electric Propulsion Component Technology Team
Energy Management Team
IDEA Phase 2 Implementation Team
Integrated Engineering Capability Development Team
ISS Regenerative Environmental Control and Life Support System Project Team
Lunar Regolith Simulant Materials Workshop Team
Magnetic Nozzle Detachment Project Team
MPLM Weld Inspection Team
MSFC Business Forum Outreach Team
MSFC Furniture Acquisition Team
MSFC Hazardous Materials Management System Implementation Team
NASA Educational Technologies Services Team
NASA Employee Orientation Program Implementation Team
Office of Strategic Communications Return to Flight Team
Plasmoid Thruster Development Team
Space Shuttle Roll Maneuver Wind Monitoring Tool Development Team
TC101 Foam Qualification Test Team
TS300 Foam Qualification Test Team
VIPA Studies Guidance, Navigation and Control Team
XRCF Cryogenic System Design and Installation Team

Research and Technology Award

Kevin H. Burks, Engineering Directorate
David A. Gwaltney, Engineering Directorate
Ronald J. Litchford, Engineering Directorate
Garry McGuire, Sverdrup/Engineering Directorate
Christopher Morris, Engineering Directorate
Bryan A. Robertson, Engineering Directorate
Terry D. Rolin, Engineering Directorate

Advanced Sensor Concepts Team

Dean C. Alhorn, Engineering Directorate
David E. Howard, Engineering Directorate
Dennis A. Smith, Engineering Directorate
Kenneth R. Dutton, Sverdrup/Engineering Directorate

Fracture Control Methodology for Composites and Bonded Vehicles Team

Gregory R. Swanson, Engineering Directorate
Marcus W. Gregg, Engineering Directorate
Gwyn C. Faile, QUALIS/Engineering Directorate

Magnetic Nozzle Team

Donald G. Chavers, Engineering Directorate
Chris C. Dobson, Engineering Directorate
Jonathan E. Jones, Engineering Directorate

Radioisotope Power System Integration, Design, Test and Evaluation Team

Jeffery T. Farmer, Engineering Directorate
John C. Forbes, Engineering Directorate
Dwight D. Goodman, Engineering Directorate
James J. Martin, Engineering Directorate
Jason B. Turpin, Engineering Directorate
David K. Wagner, Engineering Directorate

Smart Miniature Advanced Robust Technology Team

Dean C. Alhorn, Engineering Directorate
David E. Howard, Engineering Directorate
Dennis A. Smith, Engineering Directorate

Thin Disk Laser Team

Mark E. Boudreaux, Science & Mission Systems Office
James M. Carter, Science & Mission Systems Office
Helen Cole, Office of Strategic Analysis & Communications
Charles W. Griffith, Science & Mission Systems Office
Kenneth A. Herren, Science & Mission Systems Office
Thomas J. Kester, Science & Mission Systems Office
David L. Lehner, Science & Mission Systems Office
Ernest J. Mirandy, Engineering Directorate
Patricia Puckett, Science & Mission Systems Office
Jim K. Russell, Science & Mission Systems Office
Alan P. Shapiro, Science & Mission Systems Office
Cydale C. Smith, Engineering Directorate
W. Scott Smith, Science & Mission Systems Office
Tommy L. Thompson, Engineering Directorate
Gary S. Thornton, Science & Mission Systems Office
John R. West, Science & Mission Systems Office

Technology Transfer Awards

John A. Blevins, Engineering Directorate
James M. Carter, Science & Mission Systems Office
Richard A. Cloyd, Engineering Directorate
Thomas E. Markusic, Science & Mission Systems Office
Robin J. Osborne, ERC/Engineering Directorate
Kurt A. Polzin, Engineering Directorate
James Richard, Engineering Directorate
Jerry L. Seemann, Office of the Chief Counsel
Cydale C. Smith, Engineering Directorate
Phil H. Stahl, Science & Mission Systems Office

Patent Awards

Rafiq Ahmed, Engineering Directorate
Michael Book, Engineering Directorate
Thomas Bryan, Engineering Directorate
Thomas Delay, Engineering Directorate
Joseph Grant, Science & Mission Systems Office
Phillip Hall, Engineering Directorate
Richard Howard, Engineering Directorate
John Hutt, Engineering Directorate
Raj Kaul, Engineering Directorate
Andrew Keys, Science & Mission Systems Office
Jonathan Lee, Engineering Directorate
Michael A. Martin, Engineering Directorate
William N. Myers, Engineering Directorate
Robert Sackheim, Office of the Director
Fred Schramm, Engineering Directorate

Patent Awards

Continued

Eric Taylor, Office of Center Operations
Huu Trinh, Engineering Directorate
Robert Wingate, Engineering Directorate
George Xenofos, Science & Mission Systems Office

Invention of the Year Award

Data Matrix Family of Solutions

Therese Howe, KTI
Clyde S. Jones, Exploration Launch Projects Office
Bruce Kaiser, KTI
Craig Knisely, PRI
Robert D. Kuhlman, KTI
Donald Roxby, Rockwell
Harry F. Schramm, Engineering Directorate
Robert Shannon, KTI
William C.L. Shih, PRI
James D. Teed, Office of Strategic Analysis & Communications
Jack L. Weeks, VATI
Ken Wheeler, KTI
William T. Yost, NASA/Langley Research Center

Software of the Year Award

PHANTOM - A Unified Flow Analysis for Turbomachinery Flows

Daniel J. Dorney, Engineering Directorate
Douglas L. Sondak, Boston University

Obituaries

Elbert B. Craig, 81, of Huntsville died May 1. He retired from the Marshall Center in 1985 as a contract specialist supervisor. He is survived by his wife, Jackie Craig; three sons, Harry Craig of Huntsville, Richard Craig of Birmingham and Jeffrey Craig of Maryland; two daughters, Janet Craig of Huntsville and Kellie Craig of Athens; one brother, Hubert Craig of North Carolina; and two sisters, Bessie Lee Hammond of Hoover and Margaret Campbell of Ozark.

Charles Augustus Brosemer, 82, of Hazel Green died May 2. He retired from the Marshall Center in 1981 as an engineering technician. He is survived by his wife, Barbara Turner Brosemer; two sons, Richard Wayne Brosemer and Roger Allen Brosemer; and two stepsons, Lloyd Allen Jr. and Edward Allen.

James R. Martin, 76, of Albertville died May 2. He retired from the Marshall Center in 1981 as an engineer in flight mission operations. He is survived by his wife, Frankie Brumbeloe Martin; and two daughters, Nancy Cornelius of Albertville and Alice Martin Norton of Anniston.

Charles Earle Hall, 78, of Huntsville died May 6. He retired from the Marshall Center in 1983 as an aerospace engineer in guidance, navigation and control systems. He is survived by his wife, Elizabeth M. Hall; and three sons, Lyman Charles Hall of Austin, Texas, Gerald Kimber White of Norton, Mass., and Andrew Grant White of Ridgfield, Conn.

Raymond Franklin Trafton, 84, of Athens died May 7. He retired from the Marshall Center in 1980 as a manager in technical resources. He is survived by three daughters, Mary Elizabeth Stroud, Janice Lynn Moore and Rachel Ann Horton, all of Athens.

Roy Clifford Guthrie, 90, of Huntsville died May 8. He retired from the Marshall Center in 1971 as an aerospace engineer technician. He is survived by three sons, Roy Stephen Guthrie of Vandalia, Ohio, Phillip Wayne Guthrie and Eric Andrew Guthrie of Huntsville; and one brother.

Marshall honored by Space Technology Hall of Fame for farming technology with roots in Gravity Probe B program

By Sherrie Super

The Marshall Center was among several organizations recently honored by the Space Technology Hall of Fame for bringing space technology to Earth — literally. The technology — a robotic-like system for steering farm tractors — can trace its roots to NASA's Gravity Probe B program.

AutoFarm

A system used to steer tractors automatically can trace its roots to NASA's Gravity Probe B program.

The system, the Novariant AutoFarm RTK AutoSteer, evolved from highly precise positioning technology developed to help control the altitude of the Gravity Probe B spacecraft. Launched in April 2004, Gravity Probe B orbited the Earth for 17 months, using four spherical gyroscopes to test Einstein's General Theory of Relativity.

The technology's transition from space to Earth occurred as engineers determined the Gravity Probe B tracking mechanisms also could be used to control the altitude of commercial aircraft. Further research showed it could even help steer tractors plowing fields.

Using the NASA technology, Novariant Corporation of Menlo Park, Calif., developed the AutoSteer mechanism for the private sector. Now available for commercial use, the system uses a global satellite positioning system to steer farm tractors automatically without human hands at the wheel.

A driver still controls tractor acceleration and braking, but the tractor's direction is determined by the automated system. Unlike humans, who don't always drive in perfectly straight lines or whose sense of direction might be impacted by inclement weather, the automatic steering mechanism ensures straight, repeatable rows regardless of weather or visibility conditions. The mechanism can be used in virtually all phases of farming, and with straighter rows, farmers miss fewer plants in the planting and harvesting phases, resulting in higher crop yields.

The technology recently was inducted into the Space Technology Hall of Fame at the National Space Symposium in Colorado Springs, Colo. Marshall earned an organization commendation award for its role in the technology's development and commercialization.

"All of us on Gravity Probe B are proud that our work could be adapted for such a beneficial application," said Tony Lyons, NASA Gravity Probe B program manager from Marshall. "It's easy to think of a fundamental research program like GP-B as not having much practical application, but this innovation will help put food on the American dinner tables. What could be more practical than that?"

Since 1988, the Space Technology Hall of Fame has honored 52 technologies and the innovators who transformed space technology into commercial products that improve life here on Earth. Also recognized as the innovating organizations of the AutoSteer technology were the Gravity Probe B Lab of Stanford University in Stanford, Calif., and Novariant Corporation.

The Marshall Center manages the Gravity Probe B Program. NASA's prime contractor for the mission, Stanford University, conceived the experiment and is responsible for the design and integration of the science instrument, along with mission operations and data analysis.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

Discovery

Continued from page 1

to the shuttle. The flight readiness review board decided the current design does not pose sufficient risk to delay the upcoming mission while design improvements for later flights are under way.

Joining Lindsey aboard Discovery will be pilot Mark Kelly, mission specialists Mike Fossum, Piers Sellers, Lisa Nowak and Stephanie Wilson. European Space Agency astronaut Thomas Reiter will launch on Discovery and stay on the station for several months.

Aboard the station, Expedition 13 Commander Pavel Vinogradov, a Russian Federal Space Agency cosmonaut, and Flight Engineer and NASA Station Science Officer Jeff Williams will greet Discovery and its crew. Vinogradov and Williams began their six-month mission on the station March 31.

Marshall Association '05 scholarship winners complete first year of college

Each year, the Marshall Association seeks to award scholarships to college-bound children of Marshall team members. Typically, two awards are granted to those pursuing engineering or sciences and non-technical studies.

The number of scholarships and the dollar amount are dependent solely on the number of Marshall employees who join the association. The $25 annual membership fee goes directly into the scholarship fund, and Marshall employees are welcome to join the Marshall Association at any time throughout the year. Last year's winners were Emily Ricks and Brennan Gamwell.

Emily Ricks, daughter of Marshall's David Ricks, is finishing her first year at the University of Virginia in Charlottesville, pursuing a double major in physics and music. She has performed in three concerts, playing her harp with the combined Charlottesville-University Symphony Orchestra. Ricks has been nominated for membership in the National Society of Collegiate Scholars.

Brennan Gamwell, son of Marshall's Wayne Gamwell, is enrolled at Tulane University in New Orleans. He is pursuing a major in communications and a minor in French. In addition to his studies, Gamwell works for the school newspaper, has a part-time job at the university's tutoring center and is the graphic art coordinator for the quarterly Cullman Smith Lake magazine.

Information about the 2006 Marshall Association scholarships is available on "Inside Marshall."

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Employee Ads — Submit Ad." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue is 4:30 p.m. Thursday.

Miscellaneous

X-box, three controllers and one game, $110. 468-3803

iPod Remote Interactive Dock DS-A1, works with Onkyo stereo/home theater system, NIB, $75. 256-828-1234

High capacity water pump for 1986-1993 Mustang, $40. 679-1232

PVC patio table/chairs, $25; Motorola Marine alternator, 12V, $25; Lilies of the Valley plants, $1. 534-1461

Sampler type appliqué quilt blocks, five finished, includes fabric, patterns, stripping material, $40. 837-6776

Computers, 486, AMD, XT; printer w/tractor feed; flat bed scanner; miscellaneous, $50. 729-8020

Regulation Brunswick pool table, 1" slate, w/accessories, $3,000. 534-3351

Diamondback Crestview hybrid bicycle w/computer, wall rack, $150; Xport Freeloader hitch-mount, carrier, $50. 971-0571

Ashley wood-burning stove/fireplace insert, $125; solid oak fireplace mantel, $150. 880-6544

Jazzy motorized power chair, Series 1120, never used, $3,000. 852-8325

Elliot's Designs king-size brass and white enamel headboard, $200. 468-6016

Bunk beds, pine w/oak finish, Bunky Board mattresses, $150. 518-9006

Antique oak dresser w/beveled mirror, two large and two small drawers, $250. 353-0370

Washer and dryer, both working, stored in garage, $50 each. 468-4679

Belkin 4-port KVM switch w/3 sets of cables, $50. 656-2951

King headboard, $75; full headboard, $50. 772-1870

Small welding tanks: two oxygen, one Acetylene, about two gallons each, $100 for all. 325-2070

Large round glass-top table, $125; two wicker chairs, $40; toddler bed w/mattress, $20. 489-0660

Two Ikea speaker stands; two Ikea CD towers, concrete/metal structure, $20 each set. 850-4185

Pulaski reproduction oak bedroom furniture: chest w/mirror, dresser w/mirror, two nightstands, $500. 468-6016

Innotek SD-2100 in-ground pet fencing system and lightning protection system, used little, $150. 325-0085

Garden hose and enclosed reel, 75'x 5/8", used one year, $25. 837-1774

Combination/roll-around Foreman-style Teflon grill; Thermos ice-chest, Grill2Go/Fire-N-Ice, new in box, $100. 233-0705

Five nights, Laurel Crest Resort, Pigeon Forge, bedroom sleeps 4, kitchen, washer/dryer, 8-26-30, $300. 256-233-3158

1961 Editions, Why England Slept, PT-109, with original dust jackets. 508-0576

Terrier-mix puppies, 1st shots/wormed, $35. 430-1054

Vehicles

1984 Bassboat ProCraft 19', Evinrude XP150, 2-depth finders, 12-24 trolling motor - $6500 OBO. 837-9739

1992 Chevy Caprice Classic, white, 23K original miles, $6,000. 520-2394

2004 Maxima SL, 53K miles, loaded, new Michelin tires, gas 28 mpg average, $23,000. 508-6840

2002 Nissan Pathfinder SE, 63K miles, Bose CD/changer, luggage rack, running boards, bronze, $14,500. 880-9025

2004 Chevrolet Express conversion van, burgundy, CD/radio/DVD player, running boards, 9K miles, $24,000. 603-8730

2004 Harley Davidson Road King, 11K miles, pearl white, Factory Security, touring seat, $17,700. 776-0811

2003 BMW Z4 convertible, black, premium/sport package, auto, warranty, Viper security system, 36K miles, $30,000. 256-461-8680

1995 Sea Ray Sundancer 290, sleeps 6, 495 hours. 679-0705

2003 Ford F150 Lariat, Supercrew, 4.6L, 8 cyl., power, sunroof, leather, loaded, 48K miles, $19,900. 256-318-5372

2003 Ford Focus, 4-door sedan, black, auto transmission, a/c, cruise, CD, $5,500. 714-0581

1974 MGB w/overdrive, restoration project, $600. 430-4729/Brian

1994 Ford Crown Victoria, white, $1,300. 684-5712

2002 Shadow Sabre VT100 w/windshield, saddlebags, Vince & Hines pipes, 12K miles, $5,700. 256-658-0987

2005 Yukon, blue, leather interior, fully loaded, sun-roof, OnStar, low miles, make offer. 828-2643

2003 Honda Accord EX coupe, gray, 58K miles, extended warranty, leather, and spoiler. 721-1234/Nancy Self

1995 Dodge Caravan, 145K highway miles, $3,500. 772-1870

1987 Allegro motorhome, low mileage, $11,900. 426-7553

Honda Z50, 1979 collector model, photo available, $400. 527-8116

2006 Honda Pilot EXL, black, fully loaded, 12K miles, $27,900. 776-0537

2000 Skeeter SL176, fish/ski, 150 Yamaha V-Max, 2 depth finders, trolling motor, $10,000. 256-773-0018

2003 Volvo XC70, 35K miles, never damaged, new tires, one-owner, garaged, $24,000 firm. 256-882-9741

Villian II ski boat, new motor, $3,000. 679-0073

2002 Honda TRX 300 EX Sportrax, garage kept, many accessories, $3,250. 852-2201

1998 Chevrolet Cavalier, 4-cylinder, burgundy, cruise, keyless, a/c, all-power, CD/radio, 153K miles, $1,400. 256-603-3558

Wanted

Used kneeboard. 797-6173

Free moving boxes. 651-7640

Cheap set of left-handed golf clubs. 256-436-1106

Used Cingular/AT&T compatible (TMDA) Motorola V60 cell phone. 885-4095

Free

Doberman mix, neutered, 4 years, needs loving home. 529-0059

NASA announces 2006 fellowship awards

NASA has named its 2006 awardees for the NASA Administrator's Fellowship Program, an effort to ensure the strength of the nation's scientific and technical workforce.

Three people were selected from Alabama to receive the fellowship award: John Lassiter of the Marshall Center Test Laboratory and professors from Alabama A&M University in Huntsville, Dr. Manmohan Aggarwal of the Department of Physics and Dr. Goang Liaw of the School of Engineering and Technology.

The program was started nine years ago to help minority institutions respond to NASA's overall education, research and development mission. It's designed to enhance the professional development of NASA employees and faculty of minority-serving institutions.

The fellowship offers access to NASA's internal and informal information networks. It also expands knowledge of NASA's technical and scientific needs, and provides opportunities for institutions to share information about their specific capabilities and technologies.

The program is managed and administered by the United Negro College Fund Special Programs Corp. in Fairfax, Va., for NASA's Office of Education.

Marshall Center Barber Shop is back

Emmett Given/MSFC

The Barber Shop, located in Building 4203, recently reopened for business. Now operated directly by the NASA Exchange, the shop has two hair stylists. Art Hodge, left, has returned to the Marshall Center to work part time after several years of retirement. Sonya Hutchens, right, has returned, and will be available full time for all styling needs, including manicures and hair coloring. Appointments can be made by calling the new phone number at 544-2140. Operating hours are Monday through Friday from 8 a.m. to 5 p.m. Haircuts are $10 with a portion of the cost being used to help provide other benefits and services for the workforce.

Shuttle Buddies to meet June 26

The Shuttle Buddies will meet at 9 a.m., Monday, June 26, at Mullins Restaurant on Andrew Jackson Way. For more information, call Deemer Self at 881-7757.

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